Pneumatic Controls

Pneumatic Controls Sections

- Controllers and Switches
- Thermostats
- Relays
- Sensors and Transmitters

See the Contents Section at the front of the Product Catalog for the complete data sheet listing. See also Pneumatic Actuators and Pneumatic Valves tabs.
Description

The KMC CCC–1001 Receiver Controller is a pneumatic proportional controller designed for use with pneumatic transmitters, or 3 to 15 psig (21 to 103 kPa) pneumatic devices, to control valves and actuators in HVAC systems. The unit is particularly suitable in low limit applications.

The CCC–1001’s dual inputs accept 3 to 15 psig (21 to 103 kPa) signals. Field selectable proportional band action, set points and a remote setpoint adjustment add extra flexibility. The unit’s authority is adjustable from 20 to 200% of the primary input signal.

Features

- Dual inputs
- Remote setpoint adjustment
- Field selectable proportional action
- Adjustable authority

Application

The CCC–1001 is designed to control valves and actuators in HVAC systems, including low limit applications.

The CCC–1001 is designed to work with pressure switches, receiver gauges, relays and temperature transmitters.

CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device’s eventual failure.

Specifications and design subject to change without notice.
Specifications

Pressure Supply
- 20 psig (138 kPA)
- Max. 30 psig all ports (207 kPA)

Air Consumption
- 43.2 scim max. (11.8 mL/s)

Setpoint
- 1.75 psi (12 kPA)/ rev. adjustable

Throttling Range
- 4% to 40%

Action
- Direct or Reverse

Authority
- 20% to 200% of primary input

Remote Setpoint
- +/- 10% of primary input span, direct acting

Inputs
- Port 1: Primary signal 3 to 15 psig (21 to 103 kPA)
- Port 2: Remote setpoint adjustment 3 to 15 psig
- Port 3: Secondary signal 3 to 15 psig

Output
- Port “B” branch

Connections
- 3/16” (5 mm) nipples for 1/4” (6 mm) O.D. polyethylene tubing

Weight
- 21 oz. (595 grams)

Material
- Base: ABS UL Flame Class 94 HB
- Levers, Flexures: Stainless Steel
- Diaphragms: Neoprene
- Finish: Beige with clear cover

Temperature Limits
- Operating: 40° to 120° F (4° to 49° C)
- Shipping: -40° to 140° F (–40° to 60° C)

KMC Controls, Inc.
19476 Industrial Drive
New Paris, IN 46553
574.831.5250
www.kmccontrols.com
Description

The CCC–1002 is a pneumatic, proportional control device. Use with pneumatic transmitters or other 3 to 15 psig pneumatic devices, for controlling valves and actuators in HVAC systems.

Proportional band action, authority and setpoint are easily adjustable. Remote setpoint adjustment may be used if the application dictates.

The integral setpoint dial applies to port “1” and is marked from 3 to 15 psi. Adhesive dials are available to match the ranges of each Kreuter pneumatic transmitter. Order dials separately.

With the inputs and features included, it is particularly suitable for most control applications requiring a receiver controller. For “Low Limit” applications, use CCC–1001 Receiver Controller.

Features

- Dual inputs
- Remote setpoint adjustment
- Field selectable, proportional, direct or reverse action
- Adjustable authority

Application

The CCC–1002 is designed to control valves and actuators in HVAC systems, including low limit applications.

The CCC–1002 is designed to work with pressure switches, receiver gauges, relays and temperature transmitters.

!CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device's eventual failure.

Accessories

Adhesive dials for the CCC-1002.

HDO–2301: 0 to 50 psi
HDO–2302: 0 to 100 psi
HDO–2304: 0 to 300 psi
HDO–2310: 200 to 2,000 psi
HDO–2311: 300 to 3,000 psi
HDO–2312: 400 to 4,000 psi
HDO–2313: 550 to 5,500 psi
HDO–2320: 0 to 0.5” WC
HDO–2321: 0 to 1.0” WC
HDO–2322: 0 to 2.0” WC
HDO–2323: 0 to 4.0” WC
HDO–2324: -0.5” to 0.5” WC
HDO–2330: 30° to 150° F
HDO–2331: 30° to 230° F
HDO–2332: -50° to 150°
HDO–2333: 0° to 100° F
HDO–2334: 50° to 150° F
HDO–2335: 50° to 100° F
HDO–3301: 0 to 3.5 kPa
HDO–3302: 0 to 7.0 kPa
HDO–3304: 0 to 21.0 kPa
HDO–3310: 1 to 10 M/S
HDO–3311: 1.5 to 15 M/S
HDO–3312: 2 to 20 M/S
HDO–3313: 2.5 to 28 M/S
HDO–3320: 0 to 125 Pa
HDO–3321: 0 to 250 Pa
HDO–3322: 0 to 500 Pa
HDO–3323: 0 to 1,000 Pa
HDO–3324: -125 to 125 Pa
HDO–3330: 0 to 65° C
HDO–3331: 0 to 110° C
HDO–3332: -45° to 65° C

Specifications and design subject to change without notice.
Details

All dimensions in inches (mm).

Specifications

Pressure Supply
- 20 psig (138 kPa)
- Max. 30 psig all ports (207 kPa)

Air Consumption
- 43.2 scim max. (11.8 mL/s)

Setpoint
- 1.75 psi (12 kPa)/ rev. adjustable

Throttling Range
- 4% to 40%

Action
- Direct or Reverse

Authority
- 20% to 200% of primary input

Remote Setpoint
- +/- 10% of primary input span, direct acting

Inputs
- Port 1 Primary signal 3 to 15 psig (21 to 103 kPa)
- Port 2 Remote setpoint adjustment 3 to 15 psig
- Port 3 Secondary signal 3 to 15 psig

Output
- Port “B” branch

Connections
- 3/16” (5 mm) nipples for 1/4” (6 mm) O.D. polyethylene tubing

Weight
- 21 oz. (595 grams)

Material
- Base ABS UL Flame Class 94 HB
- Levers, Flexures Stainless Steel
- Diaphragms Neoprene
- Finish Beige with clear cover

Temperature Limits
- Operating 40° to 120° F (4° to 49° C)
- Shipping -40° to 140° F (–40° to 60° C)

KMC Controls, Inc.
19476 Industrial Drive
New Paris, IN 46553
574.831.5250
www.kmccontrols.com
**Description**

The KMC CCE–1000 Series pneumatic-electric relays are designed for use in HVAC system control circuits. The CCE–1000 series are ideal for applications such as starting fan coil unit fans, exhaust fans, and direct control of electric duct heaters.

Models 1001 and 1003 are single-pole, double-throw units. Models 1002 and 1004 are double-pole, double-throw units.

Models CCE–1001 and 1002 have a case and cover to conceal the switching mechanism. Wiring is accessed through two 1/2” conduit openings.

Models 1003 and 1004 are intended for use in enclosures, such as electric duct heater control panels, and do not have cases or covers.

**Features**

- Choice of single-pole, double-throw or double-pole, double-throw units.
- Models are not position sensitive and may be mounted on surfaces or in enclosures.
- CCE–1001, 1002 are UL and CSA listed, CCE–1003, 1004 are UL recognized, CSA listed

**Application**

The CCE-1000 series are ideal for starting fan coil unit fans, exhaust fans, and direct control of electric duct heaters.

!CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device’s eventual failure.

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**Models**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCE–1001</td>
<td>SPDT, with case and cover</td>
</tr>
<tr>
<td>CCE–1002</td>
<td>DPDT, with case and cover</td>
</tr>
<tr>
<td>CCE–1003</td>
<td>SPDT, without case and cover</td>
</tr>
<tr>
<td>CCE–1004</td>
<td>DPDT, without case and cover</td>
</tr>
</tbody>
</table>

**Accessories**

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPO–0009</td>
<td>Replacement Diaphragm</td>
</tr>
</tbody>
</table>
Specifications

Setpoint Range 2 to 25 psig (14 to 172 kPa)
Differential 2 psi fixed (14 kPa)
Pressure Max. 30 psig (207 kPa)

Switching Action
- CCE–1001: SPDT
- CCE–1002: DPDT
- CCE–1003: SPDT
- CCE–1004: DPDT

Connections
- Air: 3/16" (5 mm) nipples for 1/4" (6 mm) O.D. polyethylene tubing
- Electrical: 8-32 UNC binding head combination terminal screw and cup washer.

Electrical Ratings
- 20 amps non-inductive @ 120–240–480 VAC
- 1 HP @ 120 VAC; 2 HP @ 240 VAC

Weight
- CCE–1001: 10 oz. (283 grams)
- CCE–1002: 12 oz. (340 grams)
- CCE–1003: 4 oz. (113 grams)
- CCE–1004: 6 oz. (170 grams)

Material
- Black polycarbonate

Approvals
- CCE–1001, 1002: UL Listed, CSA
- CCE–1003, 1004: UL recognized, CSA

Temperature Limits
- Operating: 40° to 120° F (4° to 49° C)
- Shipping: -40° to 140° F (–40° to 60° C)

KMC Controls, Inc.
19476 Industrial Drive
New Paris, IN 46553
574.831.5250
www.kmccontrols.com
**Description**

The KMC CCE–3001 is a single-stage pneumatic-electric relay designed for applications where a single pneumatic signal requires one predetermined air pressure setting to actuate an electric switch.

The CCE–3002 is a two-stage pneumatic-electric relay, and the CCE–3003 is a three-stage pneumatic-electric relay. These relays are designed for applications where a single pneumatic air signal requires two or three predetermined air pressure settings, each actuating its own electric switch.

These relays are CSA and UL recognized. Their electrical ratings make them ideal for applications such as starting fan induction terminals or controlling one, two, or three stages of electric heating or refrigeration.

**Features**

- Choice of one, two, or three stage units.
- SPDT switching on each stage.
- Electrical rating of 25 amps each switch (non-inductive) @ 120/240/277 VAC, 1 HP @ 125 VAC, 2 HP @ 250 VAC, 750 VA pilot duty
- Fixed differential, 1 to 2 psi nominal (7 to 14 kPa)
- Setpoint range, 2 to 20 psig (14 to 138 kPa)
- Models are not position sensitive and may be mounted on surfaces or in bulk heads.
- CSA and UL recognized.

**Application**

The CCE–3000 series relays are ideal for starting fan induction terminals or controlling one, two, or three stages of electric heating or refrigeration.

**Models**

<table>
<thead>
<tr>
<th>Model</th>
<th>Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCE–3001</td>
<td>One stage</td>
</tr>
<tr>
<td>CCE–3002</td>
<td>Two stage</td>
</tr>
<tr>
<td>CCE–3003</td>
<td>Three stage</td>
</tr>
</tbody>
</table>

**CAUTION**

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.
Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setpoint Range</td>
<td>2 to 20 psig (14 to 138 kPa)</td>
</tr>
<tr>
<td>Differential</td>
<td>Fixed differential, 1 to 2 psi nominal (7 to 14 kPa)</td>
</tr>
<tr>
<td>Pressure Max.</td>
<td>30 psig (207 kPa)</td>
</tr>
<tr>
<td>Connections</td>
<td>Air: 3/16&quot; (5 mm) nipples for 1/4&quot; (6 mm) O.D. polyethylene tubing</td>
</tr>
<tr>
<td></td>
<td>Electrical: 1/4&quot; quick-connect terminals</td>
</tr>
<tr>
<td>Switching Action</td>
<td>SPDT each stage</td>
</tr>
<tr>
<td>Electrical Ratings</td>
<td>25 amps each switch (non-inductive) 120/240/277 VAC, 1 HP @ 125 VAC, 2 HP @ 250 VAC, 750 VA pilot duty</td>
</tr>
<tr>
<td>Weight</td>
<td>CCE–3001: 2 oz. (57 grams)</td>
</tr>
<tr>
<td></td>
<td>CCE–3002: 4.5 oz. (128 grams)</td>
</tr>
<tr>
<td></td>
<td>CCE–3003: 5 oz. (142 grams)</td>
</tr>
<tr>
<td>Material</td>
<td>Housing: Black polycarbonate</td>
</tr>
<tr>
<td></td>
<td>Diaphragm: Silicone</td>
</tr>
<tr>
<td>Temperature Limits</td>
<td>Operating: 40° to 150° F (4° to 60° C)</td>
</tr>
<tr>
<td></td>
<td>Shipping: –40° to 150° F (–40° to 60° C)</td>
</tr>
<tr>
<td>Approvals</td>
<td>CSA and UL recognized</td>
</tr>
<tr>
<td></td>
<td>Patent Number 4,855,545 (CEE–3002/3003)</td>
</tr>
</tbody>
</table>

KMC Controls, Inc.
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info@kmccontrols.com
**Description**

The CSC-1001 Constant Volume Controller is designed for use on constant volume boxes in HVAC systems. The CSC-1001 has two low-volume output connections that allow two different modes of operation. In one mode, the CSC-1001 is a constant volume controller without a thermostat override. In the other mode, the CSC-1001 is a high-limit controller that assumes control of a VAV terminal if a thermostat calls for too much flow.

**Specifications**

- **Setpoint Range**: 0 to 1” wc (249 kPa)
- **Proportional Band**: 0.04” wc (10 Pa)
- **Supply Pressure**: 20 psig (138 kPa) operating, 30 psig (207 kPa) maximum
- **Air Consumption**: 14.4 scim (3.93 mL/s) @ 20 psig
- **Action**: N.O. dampers only; requires D.A. Thermostat for heating, R.A. for cooling
- **Ports**: Differential Pressure Flow Sensor (HI and LO), Main Air (M), Thermostat (T), Actuator (H or C, dependent on application)
- **Material**: ABS UL Flame Class 94 HB
- **Weight**: 4 oz. (113 grams)
- **Temperature Limits**: Operating 40° to 120° F (4° to 49° C), Shipping −40° to 140° F (−40° to 60° C)

**Accessories**

- HFO-0006 In-line control-air filter
- HFO-0013 Replacement C/H port rubber cap
- ICI-1005 Pressure gauge
- SSS-1002 1 sensing point; 3-5/32” length
- SSS-1003 2 sensing points; 5-13/32” length
- SSS-1004 3 sensing points; 7-21/32” length
- SSS-1005 4 sensing points; 9-29/32” length

**CAUTION**

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

**KMC Controls, Inc.**

19476 Industrial Drive, New Paris, IN 46553
574.831.5250
www.kmcontrols.com; info@kmcontrols.com
**Description**

The pneumatic CSC-2000 series are designed for use on VAV terminal units in HVAC systems. These are differential-pressure, sub-master controllers with adjustable minimum and maximum airflow settings. A master controller, typically a room thermostat, resets the CSC-2000 velocity setpoint.

Direct acting models are for normally open VAV terminal units. Reverse acting are for normal closed VAV terminal units.

Each is equipped with separate adjustment knobs for minimum and maximum airflow settings. All models should be calibrated with the use of airflow measuring equipment.

**Models**

The table below illustrates the appropriate model for each application. If replacing a CSC-2001-22 or CSC-2002-22 (now obsolete), use the CSC-2001, CSC-2002, CSC-2003, or CSC-2004 and mount appropriately.

<table>
<thead>
<tr>
<th>Model</th>
<th>Thermostat Required</th>
<th>Setpoint Range</th>
<th>Reset Pressure Band</th>
<th>Air Consumption</th>
<th>0–10 Molded Plastic Dial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For Cooling</td>
<td>For Heating</td>
<td>Minimum</td>
<td>Maximum</td>
<td></td>
</tr>
<tr>
<td>CSC-2001</td>
<td>Direct Acting</td>
<td>0 to 1.0” wc (249 Pa)</td>
<td>Min. plus 1.0” wc (249 Pa)</td>
<td>8 ±0.5 to 13 psig (55 ±3.5 to 90 kPa)</td>
<td>14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-2003</td>
<td>Reverse Acting</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>Min. plus 2.0” wc (498 Pa)</td>
<td>11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)</td>
<td>14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-2007</td>
<td>Direct Acting</td>
<td>0 to Max</td>
<td>0 to 1.0” wc (249 Pa)</td>
<td>3 ±0.5 to 8 psig (21 ±3.5 to 55 kPa)</td>
<td>14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-2009</td>
<td>Direct Acting</td>
<td>0 to Max</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)</td>
<td>14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)</td>
</tr>
</tbody>
</table>

**Reverse Acting (Gray Controllers) for Normally Closed Dampers**

<table>
<thead>
<tr>
<th>Model</th>
<th>Thermostat Required</th>
<th>Setpoint Range</th>
<th>Reset Pressure Band</th>
<th>Air Consumption</th>
<th>0–10 Molded Plastic Dial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For Cooling</td>
<td>For Heating</td>
<td>Minimum</td>
<td>Maximum</td>
<td></td>
</tr>
<tr>
<td>CSC-2002</td>
<td>Reverse Acting</td>
<td>0 to Max</td>
<td>0 to 1.0” wc (249 Pa)</td>
<td>3 ±0.5 to 8 psig (21 ±3.5 to 55 kPa)</td>
<td>11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-2004</td>
<td>Direct Acting</td>
<td>0 to Max</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)</td>
<td>14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-2008</td>
<td>Direct Acting</td>
<td>0 to Max</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)</td>
<td>14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-2010</td>
<td>Direct Acting</td>
<td>0 to Max</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>11.5 scim @ 20 psig (3.1 mL/s @ 138 kPa)</td>
<td>14.4 scim @ 20 psig (3.93 mL/s @ 138 kPa)</td>
</tr>
</tbody>
</table>

*Specifications and design subject to change without notice.*
Separate adjustments for minimum and maximum airflow settings.


CSC-2001/2002 are equipped with 0 to 10 molded plastic reference dials; others have blind adjustments.

Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.

All dimensions in inches (mm).

Specifications

Output Sensitivity
- 0 to 1” range unit, 5 psig/0.02” wc (35 kPa/5 Pa)
- 0 to 2” range units, 5 psig/0.04” wc (35 kPa/10 Pa)

Main Air Pressure
- 15 to 30 psig (103 to 207 kPa)

Max. Signal Pressure
- 6” wc (1493 Pa) applied to either port (X or Y)

Material
- ABS (beige or gray)

Output Capability
- 0 to supply pressure

Weight
- 7.5 oz. (213 grams)

Temperature Limits
- Operating: 40° to 120° F (4° to 49° C)
- Shipping: –40° to 140° F (–40° to 60° C)

Mounting Position

The controllers are position sensitive. The min. and max. flow limits must be set (calibrated) in the same position the controller will be mounted. The CSC-2001/2002 (with molded plastic dials) must be mounted horizontally with dials facing up. The CSC-2003 through CSC-2018 may be mounted horizontally (preferred), with the adjustment knobs up or down, or mounted vertically.

Features

Accessories/Repair Parts

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Description and Application

These CSC-3000 series reset volume controllers are designed for use on heating or cooling systems with (normally open or normally closed) VAV terminal units and (direct or reverse acting) thermostats.

They are sub-master air velocity controllers. Each is equipped with separate adjustment knobs for minimum and maximum airflow setpoints. Models are available with various reset start points. A master controller, typically a room thermostat, resets the CSC-3000 between the minimum and maximum velocity setpoints.

The universal design of the CSC-3000 series is intended for new or replacement applications that call for direct or reverse acting reset on normally open or normally closed VAV terminal units.

Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC-3011-10</td>
<td>0 to 1” range; 8 psig start</td>
</tr>
<tr>
<td>CSC-3016-10</td>
<td>0 to 2” range; 8 psig start</td>
</tr>
<tr>
<td>CSC-3017-16</td>
<td>(Identical to the CSC-3011-10 but does not come with a mounting bracket or KMC logo.)</td>
</tr>
<tr>
<td>CSC-3021-10</td>
<td>0 to 1” range; 3 psig start</td>
</tr>
<tr>
<td>CSC-3023-10</td>
<td>0 to 1” range; 10 psig start</td>
</tr>
<tr>
<td>CSC-3025-10</td>
<td>0 to 2” range; 8 psig start (high flow, for Trane® units)</td>
</tr>
<tr>
<td>CSC-3026-10</td>
<td>0 to 2” range; 3 psig start</td>
</tr>
</tbody>
</table>

NOTE: These CSC-3000 Series controllers are position sensitive. They must be mounted and calibrated in either the horizontal or vertical plane.

For the CSC-3014 (designed to work with CTC-2100 Thermostats) and the CSC-3501/3505 (Linear Volume Reset Controllers), see their separate Data Sheets.

Features

- Adjustable direct or reverse acting reset (normally open or normally closed damper settings)
- Adjustable minimum and maximum setpoints
- Available in 0 to 1” and 0 to 2” wc differential pressure ranges
- Available with factory-set 3, 8, or 10 psig reset start points (field-adjustable 0–10 psig if necessary)
- See the Specifications section for more details

Accessories/Repair Parts

- HFO-0006 In-line control-air filter
- HFO-0014 G port rubber cap replacement
- HMO-4508 Mounting bracket
- ICI-1005 Pressure gauge
- SSS-1002 Flow sensor, one sensing point; 3-5/32” (80 mm) length
- SSS-1003 Flow sensor, two sensing points; 5-13/32” (137 mm) length
- SSS-1004 Flow sensor, three sensing points; 7-21/32” (195 mm) length
- SSS-1005 Flow sensor, four sensing points; 9-29/32” (252 mm) length

*(These specifications do not apply to the CSC-3014 or CSC-3501/3505; see their separate Data Sheets.)*

Specifications and design subject to change without notice.
Specifications

**Damper Action**
Factory set @ NO, adjustable for NC or NO

**Thermostat Action**
Direct or reverse action

**Main Air Pressure**
15 to 30 psig (103 to 207 kPa)

**Max. Signal Pressure**
6” wc (1493 Pa) applied to either port (H or L)

**Reset Span**
Factory set @ 5 psig (35 kPa)

**Temperature Limits**
- Operating: 40° to 120° F (4° to 49° C)
- Shipping: –40° to 140° F (–40° to 60° C)

**Material**
ABS

**Weight**
11 oz. (312 grams)

---

**Model Selection Chart**

<table>
<thead>
<tr>
<th>Model #</th>
<th>Reset Start Point Factory Set (all field-adjustable 0–10 psig)</th>
<th>Differential Pressure</th>
<th>Min. Setpoint</th>
<th>Max. Setpoint</th>
<th>Output Sensitivity</th>
<th>Air Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC-3011-10</td>
<td>8 psig (55 kPa)</td>
<td>0 to 1.0” wc (249 Pa)</td>
<td>0 to 1.0” wc (249 Pa)</td>
<td>Min. to 1.0” wc (249 Pa)</td>
<td>5 psi/0.02” wc (35 kPa/5 Pa)</td>
<td>28.8 scim @ 20 psig (7.87 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-3017-16*</td>
<td>8 psig (55 kPa)</td>
<td>0 to 1.0” wc (249 Pa)</td>
<td>0 to 1.0” wc (249 Pa)</td>
<td>Min. to 1.0” wc (249 Pa)</td>
<td>5 psi/0.02” wc (35 kPa/5 Pa)</td>
<td>28.8 scim @ 20 psig (7.87 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-3020-10</td>
<td>3 psig (21 kPa)</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>Min. to 2.0” wc (498 Pa)</td>
<td>5 psi/0.04” wc (35 kPa/10 Pa)</td>
<td>46.1 scim @ 20 psig (12.59 mL/s @ 138 kPa)</td>
</tr>
<tr>
<td>CSC-3026-10</td>
<td>3 psig (21 kPa)</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>0 to 2.0” wc (498 Pa)</td>
<td>Min. to 2.0” wc (498 Pa)</td>
<td>5 psi/0.04” wc (35 kPa/10 Pa)</td>
<td>46.1 scim @ 20 psig (12.59 mL/s @ 138 kPa)</td>
</tr>
</tbody>
</table>

**CAUTION**
Pneumatic devices must be supplied with clean, dry control air. Any other medium (e.g., oil or moisture contamination) will cause the device to fail.
**Description**

The KMC CSC–3501 and CSC–3505 Linear Reset Volume Controllers are sub-master air velocity controllers designed for use on VAV terminal units in HVAC systems where linear reset is necessary. They are ideal for dual-duct constant volume systems, and exhaust or supply tracking systems. The CSC-3501 has a one-inch differential pressure range. The CSC-3505 has a two-inch differential pressure range.

The velocity setpoint is linearly reset between preset minimum and maximum limits by a master controller, usually a room thermostat.

The CSC-3501/3505 multifunctional controllers are used for either direct or reverse acting reset for normally open or closed terminal units. The reset start point and reset span (the changes between the preset minimum and maximum flows) are factory set but field adjustable. Once set, the span is always constant regardless of the minimum and maximum limit settings.

**Features**

- One or two inch differential pressure range
- Direct or reverse action
- Field adjustable reset start point and span

**Models**

<table>
<thead>
<tr>
<th>Model</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC–3501</td>
<td>0 to 1” Range</td>
</tr>
<tr>
<td>CSC–3505</td>
<td>0 to 2” Range</td>
</tr>
</tbody>
</table>

**CAUTION**

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device’s eventual failure.
**Specifications**

**Differential Pressure Range**
CSC–3501 0 to 1” wg (249 Pa)
CSC–3505 0 to 2” wg (498 Pa)

**Minimum Setpoint Range**
CSC–3501 0 to 1” wg (249 Pa)
CSC–3505 0 to 2” wg (498 Pa)

**Maximum Setpoint Range**
CSC–3501 0 to 1” wg (249 Pa)
CSC–3505 0 to 2” wg (498 Pa)

**Maximum Signal Pressure**
6.0” wg (1494 Pa) applied to either port (H or L)

**Reset Pressure Range**
Factory set @ 5 psig (34 kPa); field adjustable 0–7 psig (48 kPa)

**Reset Start Point**
Factory set @ 8 psig (55 kPa); field adjustable 0–10 psig

**Damper Action**
Factory set @ N.O. field adjustable for N.C. or N.O.

**Thermostat Action**
Direct or reverse acting for cooling or heating

**Main Air Pressure**
15–30 psig (103 to 207 kPa)

**Air Consumption**
43.2 scim @ 20 psig (11.8 mL/s @ 138 kPa)

**Materials**
ABS, UL Flame Class 94 HB

**Ambient Limits**
**Operating**
40° to 120° F (4° to 49° C)

**Shipping**
-40° to 140° F (-40° to 60° C)

**Weight**
12 oz. (340 grams)

---

KMC Controls, Inc.
19476 Industrial Drive
New Paris, IN 46553
574.831.5250
www.kmccontrols.com
Description

The YMC Switch Series combine manually actuated gradual switches with selector switches.

The YMC–1001, gradual switch, is designed to deliver a variable, selected air pressure from the branch line to a remote device. The YMC–1001 is used in pneumatic control circuits to remotely position devices and adjust receiver-controller set-points.

The YMC–2001 and 2002 models have two selector switches, the YMC–3001 and 3002 have three switches and the YMC–6001 has six positions. Typical application for these switches include diverting and supply/exhaust of pneumatic signals to other devices.

A variety of scale plates are available. A mounting bracket for panel mounting is also available.

Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>YMC–1001</td>
<td>Gradual switch</td>
</tr>
<tr>
<td>YMC–2001</td>
<td>2-position switch, DPDT, non-vented</td>
</tr>
<tr>
<td>YMC–2002</td>
<td>2-position switch, DPDT, vented</td>
</tr>
<tr>
<td>YMC–3001</td>
<td>3-position switch, non-vented</td>
</tr>
<tr>
<td>YMC–3002</td>
<td>3-position switch, vented</td>
</tr>
<tr>
<td>YMC–6001</td>
<td>6-position, non-vented</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMO–4506</td>
<td>Mounting bracket</td>
</tr>
<tr>
<td>HDO–1101</td>
<td>Blank</td>
</tr>
<tr>
<td>Scale Plates All Models</td>
<td></td>
</tr>
<tr>
<td>HDO–1102</td>
<td>0 to 100%</td>
</tr>
<tr>
<td>HDO–1103</td>
<td>Increase CW arrow</td>
</tr>
<tr>
<td>HDO–1104</td>
<td>Increase CCW arrow</td>
</tr>
<tr>
<td>Scale Plate YMC-1001</td>
<td></td>
</tr>
<tr>
<td>HDO–1201</td>
<td>Occupied- Unoccupied</td>
</tr>
<tr>
<td>HDO–1202</td>
<td>Summer-Winter</td>
</tr>
<tr>
<td>HDO–1203</td>
<td>On-Off</td>
</tr>
<tr>
<td>HDO–1204</td>
<td>On-Auto</td>
</tr>
<tr>
<td>Scale Plate YMC-2001/2002:</td>
<td></td>
</tr>
<tr>
<td>HDO–1205</td>
<td>Open-Close</td>
</tr>
<tr>
<td>HDO–1206</td>
<td>1-2</td>
</tr>
<tr>
<td>HDO–1207</td>
<td>Day-Night</td>
</tr>
<tr>
<td>HDO–1208</td>
<td>Heat-Cool</td>
</tr>
<tr>
<td>HDO–1209</td>
<td>Manual-Auto</td>
</tr>
<tr>
<td>Scale Plate YMC-3001/3002:</td>
<td></td>
</tr>
<tr>
<td>HDO–1301</td>
<td>1-2-3</td>
</tr>
<tr>
<td>HDO–1302</td>
<td>On-Auto-Off</td>
</tr>
<tr>
<td>HDO–1303</td>
<td>Day-Auto-Night</td>
</tr>
<tr>
<td>HDO–1304</td>
<td>Occ.-Auto-Unocc.</td>
</tr>
<tr>
<td>HDO–1305</td>
<td>Heat-Auto-Cool</td>
</tr>
<tr>
<td>HDO–1306</td>
<td>Summer-Auto-Winter</td>
</tr>
<tr>
<td>HDO–1307</td>
<td>Open-Auto-Close</td>
</tr>
</tbody>
</table>

Scale Plates YMC-6001:

HDO–1601 1-2-3-4-5-6

NOTE: Scale plates are sold in packs of ten.
### Details

**Material**

- Housing: Beige ABS, UL Flame Class 94 HB; Scale plates: aluminum

**Weight:**

- YMC–1001: 3 oz (85 grams)
- YMC–2,3,6001: 2 oz. (57 grams)

**CAUTION**

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device’s eventual failure.

### Specifications

<table>
<thead>
<tr>
<th>Supply Pressure</th>
<th>30 psig (207 kPa) max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Capacity</td>
<td></td>
</tr>
<tr>
<td>YMC–1001</td>
<td>28.8 (7.87 mL/s)</td>
</tr>
<tr>
<td>YMC–2000/3000/6001</td>
<td>576 scim (157.4 mL/s)</td>
</tr>
<tr>
<td>Air Consumption</td>
<td></td>
</tr>
<tr>
<td>YMC–1001</td>
<td>28.8 (7.87 mL/s)</td>
</tr>
<tr>
<td>YMC–2000/3000/6001</td>
<td>None</td>
</tr>
<tr>
<td>Output Range</td>
<td>YMC–1001 2–18 psig (14–124 kPa) equals 0-100%</td>
</tr>
<tr>
<td>Connections</td>
<td>3/16” (5 mm) nipples for 1/4” (6 mm) O.D. polyethylene tubing.</td>
</tr>
</tbody>
</table>

**Temperature Limits**

- **Operating:** 40° to 120° F (4° to 49° C)
- **Shipping:** -40° to 140° F (-40° to 60° C)
Description

RCC–1001, 1012, 1101, 1112
Pilot capacity reversing relays designed for reversing a proportional signal from a controlling device. Factory adjusted to decrease branch line pressure as the input pressure increases. Comes with a bias adjustment and two factory calibration points (8 and 9 psi).

RCC–1102
Averaging relays designed for applications that do not require large amounts of output air volume. Suitable for room or zone applications such as VAV terminals. Use where the output signal to the controlled device must be the average of two source signals.

RCC–1006, 1106
Low pressure selector relays are designed to control a final device based on the lower of two pneumatic input signals.

RCC–1008, 1108
High pressure selector relays are designed to select the greater of two pneumatic signals as the control signal for a final device. These signals must be supplied by “relieving” type devices such as thermostats and receiver-controllers.

RCC–1009, 1109
Adjustable diverting relays are SPDT devices. They divert one signal to either of two branch circuits or select one of two inputs and transmit it to another control device. They can also be used to feed, or exhaust, a circuit.

Models

Using the list below choose the model appropriate for your application.

Without bracket
RCC–1001  Reversing; 9 psi calibration
RCC–1006  Low pressure selector
RCC–1008  High pressure selector
RCC–1009  Diverting; SPDT
RCC–1012  Reversing; 8 psi calibration

Includes Bracket
RCC–1101  Reversing; 9 psi calibration
RCC–1102  Averaging
RCC–1106  Low pressure selector
RCC–1108  High pressure selector
RCC–1109  Diverting; SPDT
RCC–1112  Reversing; 8 psi calibration

Specifications and design subject to change without notice.
Specifications

**Supply Pressure**
- 0 to 20 psig (138 kPa)
- operating 30 psig (207 kPa) maximum

**Air Capacity**
- RCC–1001, 1012 17.3 scim (4.7 mL/s) @ 20 psig (138 kPa)
- RCC–1101, 1112 20 psig (138 kPa)
- RCC–1009, 1109 432 scim (117.9 mL/s) @ 20 psig (138 kPa)
- RCC–1008, 1108 260 scim (70.6 mL/s) @ 5 psig (34.5 kPa) pressure drop

**Setpoint Range**
- RCC–1009, 1109 3 to 23 psig (21 to 159 kPa)

**Air Consumption**
- RCC–1001, 1012, 1101, 1112 17.3 scim (4.7 mL/s)
- RCC–1102 on main, 0 on signal
- RCC–1006, 1106 Port S2; 0-21.6 scim (5.9 mL/s)
- RCC–1008, 1108 None
- RCC–1009, 1109 None

**Bias Adjustment**
- RCC–1001, 1012, 1101, 1112 +/-15 psi (103 kPa)

**RCC–1009, 1109**
- Switching Differential 5 psig (34 kPa)
- Action: Below setpoint; C & NO connected
  - Above setpoint; C & NC connected
- Factory Setpoint 18 to 23 psig (124-159 kPa)

**Supply Connection**
- 3/16" (5 mm) for 1/4" (6 mm) O.D. polyethylene tubing

**Material**
- RCC–1009, 1109 glass filled nylon, all other models beige ABS UL Flame Class 94 HB

**Weight**
- 2.5 oz. (71 grams) maximum

**Temperature Limits**
- Operating 40° to 120° F (4° to 49° C)
- Shipping -40° to 140° F (-40° to 60° C)

---

**CAUTION**

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device's eventual failure.
Description

The KMC RCC–1010 is an adjustable ratio relay designed for sequencing pneumatic control components in HVAC systems.

The RCC–1010 can reduce the rate at which a pneumatic device responds to a control signal. This ratio may be adjusted on a percentage basis from zero to 100% (1 to 1). This feature reduces instability in a final control device by effectively increasing the proportional band of the circuit.

Additionally, the device output can be biased in a positive direction to increase the output of the relay. This allows the ratio operation to begin at a specific pressure, such as the start point of a pneumatic actuator.

Features

♦ Allows sequencing of pneumatic control components
♦ Allows positive bias of relays output signal
♦ Reduces final device instability by decreasing response rates

Specifications

Maximum Pressure 30 psig (207 kPa)
Air Consumption 14.4 scim (3.93 mL/s)
Ratio Range 0 to 1
Supply Air 20 psig +/- 5 psi
(138 kPa +/- 34 kPa)
Bias Adjustment 0 to 8 psi (55 kPa)
Weight 6 oz. (170 grams)
Material ABS, UL Flame Class 94 HB
Temperature Limits
  Operating 40° to 120° F (4° to 49° C)
  Shipping -40° to 140° F (-40° to 60° C)

CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device’s eventual failure.
The RCC–1011 and RCC–1111 multiple input selector relays are designed for selection of the lowest and/or highest of 6 different pneumatic inputs.

They are restricted devices designed for pilot-duty operation. If a large output volume is required, use a volume booster relay. For applications requiring a “low” output, the integral selector valve must be set for the correct number of inputs. If a “high” output is required, this dial does not need be set.

The RCC–1011 can be mounted in-line and the RCC–1111 can be mounted using the included right angle bracket.

**Features**

- Designed for pilot-duty operation
- Selects the lowest and/or highest of up to 6 different pneumatic inputs
- May be mounted in-line or with a right angle bracket.

**Models**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCC–1011</td>
<td>6 Input high/low selector relay</td>
</tr>
<tr>
<td>RCC–1111</td>
<td>6 Input high/low selector relay with bracket</td>
</tr>
</tbody>
</table>
CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device's eventual failure.

Details
All dimensions in inches (mm).

Specifications

Supply Pressure
20 psig (138 kPa)
30 psig (207 kPa) maximum

Air Consumption
28.8 scim (7.85 mL/s)

Connection
3/16" (5mm) nipple for 1/4" (6 mm) OD polyethylene tubing

Material
ABS, UL Flame Class 94HB

Weight
RCC-1011 3 oz. (85 grams)
RCC-1111 3.5 oz. (99 grams)

Temperature Limits
Operating 40° to 120° F (4 to 29° C)
Shipping -40° to 140° F (-40° to 60° C)

KMC Controls, Inc.
19476 Industrial Drive
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574.831.5250
www.kmccontrols.com
Description

The KMC RCC–1501 to 1504 adjustable reversing relays are designed to reverse a proportional signal from a controlling device. These relays are intended for any application where the output signal to the controlled device must be the reverse of the source signal.

The RCCs are factory adjusted so the input and output cross-over at a certain pressure. The RCC–1501/02 is 8 psig (55 kPa) in and out while the RCC–1503/4 is 9 psig (62 kPa) in and out. A bias adjustment of +/- 15 psig (103 kPa) is provided to retard, or advance, the output. The RCCs small size and light weight make them suitable for in-line mounting.

Features

- Available in 8 and 9 psig calibrations.
- Bias adjustment to retard or advance output +/- 15 psig (103 kPa)
- Suitable for in-line mounting

Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCC–1501</td>
<td>8 psig calibration; in-line</td>
</tr>
<tr>
<td>RCC–1502</td>
<td>8 psig calibration; with bracket</td>
</tr>
<tr>
<td>RCC–1503</td>
<td>9 psig calibration; in-line</td>
</tr>
<tr>
<td>RCC–1504</td>
<td>9 psig calibration; with bracket</td>
</tr>
</tbody>
</table>

Specifications and design subject to change without notice.
Specifications

Supply Pressure 30 psig (207 kPa) maximum
Air Consumption 14.4 scim (3.93 mL/s)
Air Capacity 1728 scim (473 mL/s) @ 20 psig (138 kPa)
Connection 3/16" (5 mm) nipple for 1/4" (6 mm) OD polyethylene tubing
Material ABS, UL Flame Class 94 HB
Weight 1501/2: 2–1/4 oz. (64 grams)
          1503/4: 3–1/2 oz. (99 grams)
Temperature Limits
  Operating 40° to 120° F (4° to 49° C)
  Shipping -40° to 140° F (-40° to 60° C)

CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device's eventual failure.

KMC Controls, Inc.
19476 Industrial Drive
New Paris, IN 46553
574.831.5250
www.kmccontrols.com
Description

The KMC RCC–1505 thru 1508 Addition and Subtraction Relays are designed for use in pneumatic control circuits.

RCC–1505 and 1506 are addition relays. They add two input signals together into one signal. This combined signal can have a maximum pressure of 30 psig (207 kPa). These models are used in systems where the output signal to a controlled device must be the sum of signals from two separate sources.

RCC–1507 and 1508 are subtraction relays. They subtract one signal from another. They are intended for use where the output signal to the controlled device must be the difference between two source signals.

All models feature a +/- 15 psig (103 kPa) bias adjustment to retard or advance the output. Additionally, their small size and light weight make them suitable for in-line mounting in any position.

Features

- Addition or subtraction of input signals up to 30 psig (207 kPa) maximum
- A +/- 15 psig (103 kPa) bias adjustment retards or advances output
- Suitable for in-line mounting

Models

<table>
<thead>
<tr>
<th>Models</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCC–1505</td>
<td>Addition; in-line</td>
</tr>
<tr>
<td>RCC–1506</td>
<td>Addition; with bracket</td>
</tr>
<tr>
<td>RCC–1507</td>
<td>Subtraction; in-line</td>
</tr>
<tr>
<td>RCC–1508</td>
<td>Subtraction; with bracket</td>
</tr>
</tbody>
</table>

Specifications and design subject to change without notice.
### Specifications

**Supply Pressure**  
30 psig (207 kPa) maximum

**Air Consumption**  
14.4 scim (3.9 mL/s)

**Air Capacity**  
1728 scim (472 mL/s)  
@ 20 psig (138 kPa)

**Connection**  
3/16" (5 mm) nipple for 1/4"  
(6 mm) OD polyethylene tubing

**Factory Settings**  
RCC–1505/1506: Port 1 = Port 2 + Port 3 (will not exceed main air pressure)  
RCC–1507/1508: Port 1 = Port 2 - Port 3

**Material**  
ABS, UL Flame Class 94 HB

**Weight**  
1505: 2–1/2 oz. (71 grams)  
1506: 3–3/4 oz. (106 grams)  
1507: 2–1/4 oz. (64 grams)  
1508: 3–1/2 oz. (99 grams)

### Temperature Limits

**Operating**  
40° to 120° F (4° to 49° C)

**Shipping**  
-40° to 140° F (-40° to 60° C)

### CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device’s eventual failure.

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KMC Controls, Inc.  
19476 Industrial Drive  
New Paris, IN 46553  
574.831.5250  
www.kmccontrols.com
Description

The KMC RCC–1509, 1510, 1515 and 1516 relays are proportional main valve capacity booster devices. They are designed to amplify control air volume in pneumatic control circuits.

The RCC models minimize system transmission lag when used with a proportional controller operating several diaphragm valves or actuators. RCC–1515 and 1516 feature a +/- 15 psig bias adjustment to advance or retard output.

Models RCC–1509 and 1515 are intended for in-line mounting while a bracket is used to mount models RCC–1510 and 1516.

Features

- Minimize transmission lag when used with a proportional controller
- A +/- 15 psig (103 kPa) bias adjustment (available on RCC–1515 and 1516) advances or retards output
- Available for bracket, or in-line, mounting

Models

| RCC–1509 | Booster w/o bias; in-line mount |
| RCC–1510 | Booster w/o bias; with bracket |
| RCC–1515 | Booster with bias; in-line mount |
| RCC–1516 | Booster with bias; with bracket |
Details

All dimensions in inches (mm).

Specifications

Supply Pressure 30 psig (207 kPa) maximum
Air Consumption 14.4 scim (3.93 mL/s)
Air Capacity 1728 scim (473 mL/s)
@ 20 psig (138 kPa)
Connection 3/16" (5 mm) nipple for 1/4" (6 mm) OD polyethylene tubing
Factory Settings Zero bias
Bias Adjustment +/- 15 psig (103 kPa)
Material ABS, UL Flame Class 94 HB
Weight
1509/1515 2–1/4 oz. (64 grams)
1510/1516 3–1/2 oz. (99 grams)
Temperature Limits
Operating 40° to 120° F (4° to 29° C)
Shipping -40° to 140° F (-40° to 60° C)

!CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device’s eventual failure.

KMC Controls, Inc.
19476 Industrial Drive
New Paris, IN 46553
574.831.5250
www.kmccontrols.com

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Description

KMC RCC–1511 and 1512 are main valve capacity ratio relays designed to provide an output signal proportional to an input. Applications include pneumatic control circuits where the final control device must be controlled by a signal that is proportionally different from the source signal.

RCC–1511/12 relays react to each 1 psi input change with a 2 psi change to the output signal. A +/- 7.5 psi (52 kPa) bias adjustment is provided. The units are factory set for 9 psi out with 9 psi in with no bias.

The relays compact size and light weight make them suitable for in-line mounting in any position.

Features

- Proportional 1 to 2 input to output change
- A +/- 7.5 psig (52 kPa) bias adjustment
- Models are available for bracket or in-line mounting

Models

<table>
<thead>
<tr>
<th>Models</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCC–1511</td>
<td>in-line mount</td>
</tr>
<tr>
<td>RCC–1512</td>
<td>with mounting bracket</td>
</tr>
</tbody>
</table>

Specifications and design subject to change without notice.
Details

All dimensions in inches (mm).

Specifications

Supply Pressure 30 psig (207 kPa) maximum
Air Consumption 14.4 scim (3.93 mL/s)
Air Capacity 1728 scim (472 mL/s) @ 20 psig (138 kPa)
Connection 3/16" (5mm) nipple for 1/4" (6 mm) O.D. polyethylene tubing
Factory Settings 9 psig in (62 kPa) 9 psig out
Material ABS, UL Flame Class 94 HB
Weight 1511 2–1/2 oz. (71 grams)
1512 3–3/4 oz. (106 grams)

Temperature Limits

Operating 40° to 120° F (4° to 49° C)
Shipping -40° to 140° F (-40° to 60° C)

KMC Controls, Inc.
19476 Industrial Drive
New Paris, IN 46553
574.831.5250
www.kmccontrols.com

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Description

KMC RCC–1513 and RCC–1514 averaging relays are proportional devices designed to average two signals in pneumatic control circuits. They are used where the output signal to the controlled device must be the average of two different source signals. Additionally, air output volume is amplified, minimizing system lag.

The RCC–1513 and 1514’s compact size and lightweight make them suitable for in-line or bracket mounting in any position.

Features

- Proportional averaging of two input signals into one output signal
- Air volume is amplified minimizing system lag
- Models are available for bracket or in-line mounting

Models

- RCC–1513  in-line mount
- RCC–1514  with mounting bracket

Specifications and design subject to change without notice.
Details

All dimensions in inches (mm).

Specifications

Supply Pressure  30 psig (207 kPa) maximum
Air Consumption  14.4 scim (3.93 mL/s)
Air Capacity  1728 scim (472 mL/s)
               @ 20 psig (138 kPa)
Connection  3/16" (5 mm) nipple for 1/4" (6 mm) O.D. polyethylene tubing
Factory Settings  Proportional; average of two inputs may not exceed main air pressure
Material  ABS, UL Flame Class 94HB
Weight  1513  2–1/2 oz. (71 grams)
        1514  3–3/4 oz. (106 grams)
Temperature Limits
               Operating  40° to 120° F (4° to 49° C)
               Shipping  -40° to 140° F (-40° to 60° C)

!CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device's eventual failure.
**Description**

The KMC SSS–1000 sensors are designed to sense differential pressure in the inlet section of variable air volume terminal units and fan terminal units. They can also be used to sense differential pressure at other locations in the main, or branch, duct systems.

The “H” port senses total pressure and the “L” port senses static pressure. The difference between these signals is the differential, or velocity pressure.

Models offer up to four sensing points and lengths of 3–5/32” to 9–29/32” to accommodate box size diameters of 4” to 16”.

**Applications**

The SSS–1000 Series sensors are typically used in conjunction with the CSC–1000, 2000, and 3000 series of VAV terminal controllers for individual zone control in HVAC systems.

**Models**

- SSS–1002 One sensing point; 3–5/32” (80 mm) length
- SSS–1003 Two sensing points; 5–13/32” (137 mm) length
- SSS–1004 Three sensing points; 7–21/32” (195 mm) length
- SSS–1005 Four sensing points; 9–29/32” (252 mm) length
Details

All dimensions in inches (mm).

Specifications

Material: Light almond ABS/Polycarbonate (UL94-5V)
Mounting: Integral flange with gasket
Connection: 1/4" (6 mm) nipple for 3/8" (10 mm) O.D. polyethylene tubing
Weight: 1 oz. (28 grams)
Temperature Limits:
  Operating: 40° to 120° F (4° to 49° C)
  Shipping: -40° to 140° F (-40° to 60° C)
**Description**

The KMC TPC–1002 and 1003 are one-pipe pneumatic differential pressure transmitters. They transmit a fixed 3 to 15 psi (21 to 103 kPa) signal which is fully proportional to the monitored differential pressure.

All models require a restricted control air source. KMC recommends using an HFO–0010 restrictor “T” (ordered separately). Input medium to the sensing connection may be water, steam, air or oil. The TPCs phosphor-bronze bellows and stainless steel mechanism ensure accuracy even in rugged conditions.

**Features**

- Fully proportional 3 to 15 psi (21 to 103 kPa) signal
- Use water, steam, air or oil as an input medium
- Rugged construction ensures accuracy

**Applications**

The output signal can be used as an input for receiver controllers, or supplied to receiver gauges for visual monitoring of system conditions.

**Models**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPC–1002</td>
<td>Differential Pressure; 0 to 50 psi (0 to 345 kPa)</td>
</tr>
<tr>
<td>TPC–1003</td>
<td>Differential Pressure; 0 to 100 psi (0 to 689 kPa)</td>
</tr>
</tbody>
</table>

**Accessories**

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFO–0010</td>
<td>Restrictor “T”</td>
</tr>
</tbody>
</table>
### Specifications

**Action**  
Direct acting, proportional

**Output Pressure**  
3 to 15 psig (21 to 103 kPa)

**Supply Pressure**  
20 psig (138 kPa) supplied through a restrictor (HFO–0010 ordered separately)  
30 psig (207 kPa) max.

**Air Consumption**  
14.4 scim (3.93 mL/s)

**Air Connections**  
1/8" FPT

**Maximum AP**  
TPC–1002  
85 psi (586 kPa)  
TPC–1003  
150 psi (1034 kPa)

* Do not exceed 300 psi (2068 kPa) input pressure.

**Material**  
Zinc case, brass and stainless steel mechanism

**Weight**  
1.1 lbs. (0.5 kg)

---

### Temperature Limits

**Operating**  
40° to 120° F (4° to 49° C)

**Shipping**  
-40° to 140° F (-40° to 60° C)

---

**CAUTION**

Pneumatic devices MUST operate with CLEAN, DRY, control air.

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KMC Controls, Inc.  
19476 Industrial Drive  
New Paris, IN 46553  
574.831.5250  
www.kmccontrols.com

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The KMC TSC–2000 series are one-pipe pneumatic devices designed to transmit a fully proportional, fixed span 3 to 15 psig (20 to 103 kPa) output signal.

With five different ranges available, the output signal can be used as an input for receiver-controllers or receiver gauges for visual indication of system conditions.

The TSC–2000 series requires a restricted input air supply. An HFO–0010 restrictor T is available separately. The units must be mounted with the control air port pointing down.

**Features**
- Fully proportional 3 to 15 psi (21 to 103 kPa) signal
- Five selectable output signal ranges
- Works with receiver controllers or receiver gauges.

**Applications**
Typical uses include sensing and transmitting static pressure drop across filters, fans or any two reference points or velocity pressure differentials.

**Models**
- TSC–2001: 0” to 0.5” WC (0 to 0.12 kPa)
- TSC–2002: 0” to 1” WC (0 to 0.25 kPa)
- TSC–2003: 0” to 2” WC (0 to 0.5 kPa)
- TSC–2004: 0” to 4” WC (0 to 1.0 kPa)
- TSC–2005: -0.5” to 0.5” WC (-0.12 to 0.12 kPa)

**Accessories**
- HFO–0010: Restrictor Tee

*Specifications and design subject to change without notice.*
Specifications

Action: Direct acting
Output: 3 to 15 psig (20 to 103 kPa)
Supply Pressure: 20 psig (138 kPa) supplied through a filtered restrictor sold separately (HFO-0010)
Supply Pressure: 30 psig (207 kPa) max.
Air Consumption: 14.4 scim (3.93 mL/s)
Air Connections: 3/16" (5 mm) fittings for 1/4" (6 mm) O.D. polyethylene tubing
Material: Beige ABS, UL Flame Class 94HB
Weight: 4 oz. (113 grams)

Temperature Limits
Operating: 40°F to 120°F (4°C to 49°C)
Shipping: -40°F to 140°F (-40°C to 60°C)

CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device’s eventual failure.
Description

The KMC TTC–1000 Series are designed to sense air, or fluid temperatures and transmit a fixed span, 3 to 15 psig (21 to 103 kPa) signal to a controlling or indicating device. These include receiver controllers, receiver gauges, relays and pressure switches.

The TTC–1000 series have rigid stems and may be mounted directly into an airstream, or into a well for water and steam applications. These one-pipe transmitters require a restrictor “T” (HFO–0022 or HFO–0023) and a constant air source.

Models are available in several temperature ranges to meet most control system requirements. A copper element provides dependable, accurate signals.

Features

♦ Fully proportional, fixed span, 3 to 15 psi (21 to 103 kPa) signal
♦ Mounts directly into airstreams or wells for water and steam applications.
♦ Available in 4 different temperature ranges

Applications

The TTC–1000s are typically used with receiver controllers, receiver gauges, relays and pressure switches.

Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTC–1003</td>
<td>0° to 100° F (-18° to 38° C)</td>
</tr>
<tr>
<td>TTC–1004</td>
<td>50° to 150° F (10° to 66° C)</td>
</tr>
<tr>
<td>TTC–1005</td>
<td>50° to 100° F (10° to 38° C)</td>
</tr>
<tr>
<td>TTC–1006</td>
<td>40° to 240° F (4° to 116° C)</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFO–0022</td>
<td>Restrictor T for polyethylene tubing</td>
</tr>
<tr>
<td>HFO–0023</td>
<td>Restrictor T for copper or polyethylene tubing</td>
</tr>
<tr>
<td>HMO–4503</td>
<td>Brass well; 3/8”–18 MPT x 11–1/16” (28 cm long)</td>
</tr>
<tr>
<td>HMO–4504</td>
<td>Duct Mounting Bracket</td>
</tr>
<tr>
<td>HMO–4515</td>
<td>Stainless steel well; 3/8”–18 MPT x 11–1/16” (28 cm long)</td>
</tr>
</tbody>
</table>

Specifications and design subject to change without notice.
**Specifications**

**Action**
Direct acting, proportional

**Output Pressure**
3 to 15 psig (21 to 103 kPa)

**Supply Pressure**
20 psig (138 kPa) supplied through a 28.8 scim (7.87 mL/s) restrictor (HFO–0022 or 0023) ordered separately

30 psig (207 kPa) max.

**Air Consumption**
28.8 scim (7.87 mL/s)

**Air Connections**
1/8” FPT

**Material**
Zinc case, brass and stainless steel mechanism, copper element

**Weight**
1.5 lbs (.68 kg)

**Temperature Limits**
- Operating  40° to 120° F (4° to 49° C)
- Shipping  -40° to 140° F (-40° to 60° C)

---

CAUTION

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device's eventual failure.

---

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**Description**

The KMC TTC-1507 is designed to sense outside air temperatures and transmit a fixed span 3 to 15 psig signal to controlling and indicating devices.

The TTC-1507 may be mounted directly in an airstream, or the sensing bulb may be fed through an outside wall. The remote bulb uses a stainless steel mechanism and copper element to ensure accuracy and dependability over a -40° to 160° F (-40° to 71° C) range.

The TTC-1507 is a one-pipe transmitter and requires a restrictor tee (HFO–0022 or HFO–0023) and a constant air source for proper operation.

**Features**

- Fully proportional 3 to 15 psi (21 to 103 kPa) signal
- Inserts directly into an airstream or can be serpentinaed across.
- Uses a stainless steel mechanism and copper element to ensure accuracy and dependability

**Applications**

Typical uses include transmitting signals to receiver controllers, gauges, relays and pressure switches.

**Accessories**

<table>
<thead>
<tr>
<th>HFO-0022</th>
<th>Restrictor T for polyethylene tubing</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFO-0023</td>
<td>Restrictor T for copper or polyethylene tubing</td>
</tr>
</tbody>
</table>

*Specifications and design subject to change without notice.*
Specifications

**Action**
Direct acting, proportional

**Sensor Range**
-40° to 160° F (-40° to 71° C)

**Output Pressure**
3 to 15 psig (21 to 103 kPa)

**Supply Pressure**
20 psig (138 kPa) supplied through a restrictor HFO-0022 or HFO-0023, 30 psig (207 kPa) max.

**Air Consumption**
28.8 scim (7.87 mL/s)

**Air Connections**
1/8" FPT

**Material**
Zinc case, brass and stainless steel mechanism, copper element

**Weight**
1.5 lbs (.68 kg)

**Temperature Limits**
- Operating -40° to 160° F (-40° to 71° C)
- Shipping -40° to 140° F (-40° to 60° C)

---

**CAUTION**
Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device's eventual failure.
Description

KMC TTC–2003, 2004 and 2005 are designed to measure room temperature and transmit a fixed span 3–15 psig signal to controlling and indicating devices.

The TTC–2003, 2004, and 2005 devices feature a copper averaging element. The element may be inserted into the air stream in a direct or serpentine fashion. Capillary clips (HMO–4523) should be used to support a serpented element across the air stream.

The transmitters require a restrictor T (HFO–0022 or HFO–0023) and a constant air source for proper operation.

Features

- Fully proportional 3 to 15 psi (21 to 103 kPa) signal
- Three temperature ranges and element lengths
- Insert directly into an air stream or serpentine across
- Uses a stainless steel mechanism and copper element to ensure accurate and dependability

Applications

Typical uses include receiver controllers and gauges, relays and pressure switches.

Models

- TTC–2003 0° to 100° F (-18° to 38° C) range, element is 17 feet long (5.18 m)
- TTC–2004 50° to 150° F (10° to 66° C) range, element is 20 feet long (6.09 m)
- TTC–2005 50° to 100° F (10° to 38° C) range, element is 23 feet long (7.01 m)

Accessories

- HFO–0022 Restrictor T for polyethylene tubing
- HFO–0023 Restrictor T for copper or polyethylene tubing
- HMO–4523 Capillary mounting clips
**Specifications**

**Action**
Direct acting, proportional

**Range**
-40° to 160° F (-40° to 71° C)

**Output Pressure**
3 to 15 psig (21 to 103.5 kPa)

**Supply Pressure**
20 psig (138 kPa) supplied through a 8.8 scim (7.87 mL/s) restrictor (HFO–0022 or HFO–0023) 30 psig (207 kPa) max.

**Air Consumption**
28.8 scim (7.87 mL/s)

**Air Connections**
1/8” FPT

**Material**
Zinc case, brass and stainless steel mechanism, copper element

**Weight**
1.5 lbs (.68 kg)

**Temperature Limits**
- Operating 40° to 120° F (4° to 49° C)
- Shipping -40° to 140° F (-40° to 60° C)

---

**CAUTION**

Pneumatic devices MUST operate with CLEAN, DRY, control air. Any other medium will result in the device's eventual failure.
KMC TTC–3001 is designed to measure room temperature and transmit a proportional pneumatic signal to a receiver gage and/or a receiver-controller. It will transmit a 3 to 15 psig signal over a 50° to 100°F (10° to 38° C) span. The unit is factory calibrated.

A highly sensitive bimetal element with feedback is utilized for accuracy and stability. An external restrictor tee (HFO–0010) in the supply line is required.

The TTC–3001 is designed to mount directly to a flat surface or in a 2” x 4” handy box. A variety of covers, backplates and scale plates are available to meet most installation requirements.

**Features**

- Fully proportional 3 to 15 psi (21 to 103 kPa) signal over 50° to 100° F span.
- Sensitive bimetal element provides accuracy and stability.
- Mounts on a flat surface or in a 2” x 4” handy box.

**Accessories**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFO–0010</td>
<td>14.4 scim restrictor tee</td>
</tr>
<tr>
<td>HFO–0028</td>
<td>Tubing kit</td>
</tr>
<tr>
<td>HMO–5023</td>
<td>Drywall mounting kit</td>
</tr>
<tr>
<td>HMO–5024</td>
<td>2” x 4” almond backplate w/ aluminum trim</td>
</tr>
<tr>
<td>HMO–5026</td>
<td>2” x 4” white backplate w/ aluminum trim</td>
</tr>
<tr>
<td>HMO–5030</td>
<td>2” x 4” almond backplate w/ matching trim</td>
</tr>
<tr>
<td>HMO–5031</td>
<td>2” x 4” white backplate w/ matching trim</td>
</tr>
</tbody>
</table>

**SCALE PLATES**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPO–0047</td>
<td>°F Horizontal scale plate</td>
</tr>
<tr>
<td>HPO–0048</td>
<td>°F Vertical scale plate</td>
</tr>
<tr>
<td>HPO–0049</td>
<td>°C Horizontal scale plate</td>
</tr>
<tr>
<td>HPO–0050</td>
<td>°C Vertical scale plate</td>
</tr>
</tbody>
</table>

**ABS COVERS (UL Flame Class 94HB)**

- HPO–1501 Blank; almond color
- HPO–1502 Blank; white color
- HPO–1511 Window; almond color
- HPO–1512 Window; white color

**METAL COVERS**

- HPO–1503 Blank; brushed aluminum finish
- HPO–1504 Blank; painted white
- HPO–1505 Blank; brushed brass finish
- HPO–1506 Blank; painted almond
- HPO–1513 Window; brushed aluminum finish
- HPO–1514 Window; painted white
- HPO–1515 Window; brushed brass finish
- HPO–1516 Window; painted almond

**UNIVERSAL UPGRADE KITS**

- HMO–5500 Almond, for competitive brands
- HMO–5501 White, for competitive brands.

Specifications and design subject to change without notice.
Details

SCALE PLATES AND COVERS SOLD SEPARATELY

FRONT

GAGE TAP
SETPOINT CALIBRATION
1/16" ALLEN WRENCH

COVER SCREWS, 2

BACK

1.31/32"
(50)

1.31/32"
(50)

63/64"
(25)

63/64"
(25)

2.9/16"
(65)

2.9/16"
(65)

3.1/4"
(83)

3.1/4"
(83)

T1

T2

T2 - DO NOT USE!

Specifications

Action  Direct acting, proportional
Temperature Range  -50° to 100° F (10° to 38° C)
Output Pressure  3 to 15 psig (21 to 103 kPa)
Supply Pressure  20 psig (138 kPa) supplied through a 14.4 scim (4 mL/s) restrictor (HFO–0011) ordered separately
30 psig (207 kPa) max.
Material  Black ABS, UL Flame Class 94 HB
Weight  3 oz (85 grams)
Temperature Limits
  Operating  40° to 120° F (4° to 49° C)
  Shipping  -40° to 140° F (-40° to 60° C)